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☐	L7	L2 or l3	9
☐	L6	L1 and (add$3 near3 synthesis gas near4 hydrogen)	0
☐	L5	L1 and (add$3 near3 syngas gas near4 hydrogen)	0
☐	L4	L1 and (mix$3 near3 syngas gas near4 hydrogen)	0
☐	L3	L1 and (mix$3 near3 synthesis gas near4 hydrogen)	4
☐	L2	L1 and (adjust$3 near2 synthesis gas or adjust$3 near2 syngas)	6
☐	L1	(first syngas) or (first synthesis gas)	271

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☐ 1. Document ID: US 20040247499 A1

Using default format because multiple data bases are involved.

L7: Entry 1 of 9 File: PGPB Dec 9, 2004

PGPUB-DOCUMENT-NUMBER: 20040247499
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040247499 A1

TITLE: System for synthesizing liquid fuel

PUBLICATION-DATE: December 9, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Matsuoka, Kei	Tokyo		JP	
Uchino, Akira	Tokyo		JP	
Kobayashi, Yukihiro	Chiba		JP	

US-CL-CURRENT: 422/191; 422/188, 422/211

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

☐ 2. Document ID: US 20040102532 A1

L7: Entry 2 of 9 File: PGPB May 27, 2004

PGPUB-DOCUMENT-NUMBER: 20040102532
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20040102532 A1

TITLE: Managing hydrogen and carbon monoxide in a gas to liquid plant to control the H2/CO ratio in the Fischer-Tropsch reactor feed

PUBLICATION-DATE: May 27, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Landis, Stephen R.	Katy	TX	US.	
Espinoza, Rafael L.	Ponca City	OK	US	
Mohedas, Sergio R.	Ponca City	OK	US	
Belt, Barbara A.	Seabrook	TX	US	

Melquist, Vincent H.	Ponca City	OK	US
Goodwin, Ralph T. III	Ponca City	OK	US

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	COUNTRY	TYPE CODE
ConocoPhillips Company	Houston	TX		02

APPL-NO: 10/ 388843 [PALM]
DATE FILED: March 15, 2003

RELATED-US-APPL-DATA:
Application 10/388843 is a continuation-in-part-of US application 10/303606, filed November 25, 2002, PENDING

INT-CL: [07] C07 C 27/06

US-CL-PUBLISHED: 518/726
US-CL-CURRENT: 518/726

REPRESENTATIVE-FIGURES: 2

ABSTRACT:

The present invention provides a process for controlling the ratio of hydrogen to carbon monoxide in feed streams to reactors that convert syngas to hydrocarbon liquids. The process includes primary syngas production process for converting hydrocarbon gas to syngas comprising hydrogen and carbon monoxide. The process further includes introducing a hydrogen rich stream, a carbon monoxide rich stream, or both produced by an auxiliary source to a feed stream being passed to a reactor for converting the syngas to hydrocarbon liquid, thereby adjusting the H.sub.2/CO ratio in the feed stream. Examples of reactors that may be used to convert syngas to hydrocarbon liquids are FT reactors staged in series and oxygenate producing reactors staged in series.

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation in part of U.S. patent application Ser. No. 10/303,606, filed Nov. 25, 2002, entitled "Syngas Production with Adjustable Hydrogen to CO Ratio," incorporated herein by reference.

☐ 3. Document ID: US 20030236312 A1

L7: Entry 3 of 9 File: PGPB Dec 25, 2003

PGPUB-DOCUMENT-NUMBER: 20030236312
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030236312 A1

TITLE: Process for conversion of LPG and CH4 to syngas and higher valued products

PUBLICATION-DATE: December 25, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
O'Rear, Dennis J.	Petaluma	CA	US	

APPL-NO: 10/ 179604 [PALM]
DATE FILED: June 25, 2002

INT-CL: [07] C07 C 27/06

US-CL-PUBLISHED: 518/728
US-CL-CURRENT: 518/728

REPRESENTATIVE-FIGURES: 1

ABSTRACT:

The present invention relates to a process for the production of a blended syngas feed with a variable H.sub.2/CO ratio for use in a syngas conversion reactor. In this process a H.sub.2/CO ratio of from approximately 1.0 to 3.0 for the blended syngas feed is selected. A first syngas is formed with a H.sub.2/CO ratio of at least 2.0 by reacting methane with an oxygen source. A second syngas is formed with a H.sub.2/CO ratio of no more than 1.5 by reacting LPG with CO.sub.2. The first syngas and the second syngas are blended to form a blended syngas feed with the selected H.sub.2/CO ratio, and this blended syngas feed may be used in the syngas conversion reactor.

☐ 4. Document ID: US 20030050348 A1

L7: Entry 4 of 9 File: PGPB Mar 13, 2003

PGPUB-DOCUMENT-NUMBER: 20030050348
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030050348 A1

TITLE: Hydrocarbon conversion process using a plurality of synthesis gas sources

PUBLICATION-DATE: March 13, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Kennedy, Paul Edwin	Tulsa	OK	US	

APPL-NO: 10/ 284810 [PALM]
DATE FILED: October 31, 2002

RELATED-US-APPL-DATA:
Application 10/284810 is a division-of US application 09/817544, filed March 26,

2001, PENDING

INT-CL: [07] C07 C 27/06

US-CL-PUBLISHED: 518/702
US-CL-CURRENT: 518/702

REPRESENTATIVE-FIGURES: NONE

ABSTRACT:

A Fischer-Tropsch-based process and system for converting light hydrocarbons into heavier hydrocarbons uses a plurality of different synthesis gas generators. The process includes preparing a first synthesis gas having a H.sub.2:CO ratio greater than 2:1; removing a portion of the hydrogen from the first synthesis gas; preparing a second synthesis gas with a CO.sub.2 recycle wherein the second synthesis gas has a H.sub.2:CO ratio less than 2:1; adding the removed hydrogen to the second synthesis gas to increase the H.sub.2:CO ratio of the second synthesis gas; and using a Fischer-Tropsch reaction to convert the first synthesis gas and the second synthesis gas to heavier hydrocarbons.

RELATED PATENT APPLICATION

[0001] This application claims priority of U.S. Provisional Application No. 60/192,503, filed Mar. 28, 2000, entitled, "System and Method for Converting Light Hydrocarbons Into heavier Hydrocarbons with a Plurality of Synthesis Gas Sources."

☐ 5. Document ID: US 20010047040 A1

L7: Entry 5 of 9 File: PGPB Nov 29, 2001

PGPUB-DOCUMENT-NUMBER: 20010047040
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010047040 A1

TITLE: System and method for converting light hydrocarbons into heavier hydrocarbons with a plurality of synthesis gas subsystems

PUBLICATION-DATE: November 29, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Agee, Kenneth L.	Bixby	OK	US	
Agee, Mark A.	Tulsa	OK	US	

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	COUNTRY	TYPE CODE
Syntroleum Corporation, Delaware corporation				02

APPL-NO: 09/ 902861 [PALM]

DATE FILED: July 11, 2001

RELATED-US-APPL-DATA:
Application 09/902861 is a division-of US application 09/538609, filed March 29, 2000, US Patent No. 6277894
Application is a non-provisional-of-provisional application 60/126996, filed March 30, 1999,

INT-CL: [07] C07 C 27/06, B01 J 8/04

US-CL-PUBLISHED: 518/704; 422/189
US-CL-CURRENT: 518/704; 422/189

REPRESENTATIVE-FIGURES: 1

ABSTRACT:

A system and method for converting normally gaseous, light hydrocarbons into heavier, longer-chain hydrocarbons includes a turbine; a first synthesis gas subsystem; a second synthesis gas subsystem that receives thermal energy from the turbine and which preferably includes a steam reformer; and a synthesis subsystem for receiving synthesis gas from the first synthesis gas subsystem and the second synthesis gas subsystem and for producing the heavier hydrocarbons. A method includes using a plurality of synthesis gas subsystems to prepare synthesis gas for delivery to and conversion in a synthesis subsystem.

☐ 6. Document ID: US 20010027220 A1

L7: Entry 6 of 9 File: PGPB Oct 4, 2001

PGPUB-DOCUMENT-NUMBER: 20010027220
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010027220 A1

TITLE: Hydrocarbon conversion process using a plurality of synthesis gas sources

PUBLICATION-DATE: October 4, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Kennedy, Paul Edwin	Tulsa	OK	US	

APPL-NO: 09/ 817544 [PALM]
DATE FILED: March 26, 2001

RELATED-US-APPL-DATA:
Application 09/817544 is a reissue-of US application 60/192503, filed March 28, 2000, PENDING

INT-CL: [07] C07 C 27/06

US-CL-PUBLISHED: 518/702
US-CL-CURRENT: 518/702

REPRESENTATIVE-FIGURES: NONE

ABSTRACT:

A Fischer-Tropsch-based process and system for converting light hydrocarbons into heavier hydrocarbons uses a plurality of different synthesis gas generators. The process includes preparing a first synthesis gas having a H.sub.2:CO ratio greater than 2:1; removing a portion of the hydrogen from the first synthesis gas; preparing a second synthesis gas with a CO.sub.2 recycle wherein the second synthesis gas has a H.sub.2:CO ratio less than 2:1; adding the removed hydrogen to the second synthesis gas to increase the H.sub.2:CO ratio of the second synthesis gas; and using a Fischer-Tropsch reaction to convert the first synthesis gas and the second synthesis gas to heavier hydrocarbons.

RELATED PATENT APPLICATION

[0001] This application claims priority of U.S. Provisional Application No. 60/192,503, filed Mar. 28, 2000, entitled, "System and Method for Converting Light Hydrocarbons Into heavier Hydrocarbons with a Plurality of Synthesis Gas Sources."

☐ 7. Document ID: US 6774148 B2

L7: Entry 7 of 9 File: USPT Aug 10, 2004

US-PAT-NO: 6774148
DOCUMENT-IDENTIFIER: US 6774148 B2

TITLE: Process for conversion of LPG and CH4 to syngas and higher valued products

DATE-ISSUED: August 10, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
O'Rear; Dennis J.	Petaluma	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Chevron U.S.A. Inc.	San Ramon	CA			02

APPL-NO: 10/ 179604 [PALM]
DATE FILED: June 25, 2002

INT-CL: [07] C07 C 27/00, C07 C 1/02

US-CL-ISSUED: 518/702; 518/703, 518/705, 518/706, 518/715, 252/373
US-CL-CURRENT: 518/702; 252/373, 518/703, 518/705, 518/706, 518/715

FIELD-OF-SEARCH: 518/702, 518/703, 518/705, 518/706, 518/715, 518/700, 252/373

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3919114	November 1975	Reynolds	
4279830	July 1981	Haag et al.	
4690777	September 1987	Valenyi et al.	
4703793	November 1987	Townsend	
4782096	November 1988	Banquy	
4785877	November 1988	Shen-Tu	
4863712	September 1989	Twigg et al.	
5149516	September 1992	Han et al.	
5324335	June 1994	Benham et al.	
5658452	August 1997	Heyse et al.	
5674376	October 1997	Heyse et al.	
5676821	October 1997	Heyse et al.	
5863418	January 1999	Heyse et al.	
6274113	August 2001	Heyse et al.	
6310108	October 2001	Bonneau et al.	518/700
6479557	November 2002	Lange et al.	
2003/0148894	August 2003	Vinegar et al.	507/200

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
8302479	August 1985	BR	
3617280	November 1987	DE	
3941591	June 1991	DE	
WO 93/15999	August 1993	WO	
WO 99/55618	November 1999	WO	

OTHER PUBLICATIONS

A. Santos, "Oxidation of Methane to Synthesis Gas in a Fluidized Bed Reactor Using MgO-Based Catalysts," Journal of Catalysis, 1996, pp. 83-91, vol. 158, Issue 1, Academic Press Inc.
S. Teuner, "A New Process to Make Oxo-Feed," Hydrocarbon Processing, Jul. 1987, p. 52, vol. 66, Issue 7, Gulf Pub. Co, Houston, TX.
S. Teuner, "Make CO from CO2," Hydrocarbon Processing, May 1985, pp. 106-107, vol. 64, Issue 5, Gulf Pub. Co, Houston, TX.
N.R. Udengaard, et al., "Sulfur Passivated Reforming Process Lowers Syngas H2/CO Ratio", Oil & Gas Journal, Mar. 9, 1992, pp. 62-67, vol. 90, Issue 10, Petroleum Pub Co, Tulsa, OK.
United Kingdom Search Report Dated Oct. 30, 2003.
International Search Report Mailed Nov. 28, 2003.

ART-UNIT: 1621

PRIMARY-EXAMINER: Parsa; J.

ATTY-AGENT-FIRM: Burns, Doane, Swecker & Mathis, L.L.P.

ABSTRACT:

The present invention relates to a process for the production of a blended syngas feed with a variable H.sub.2 /CO ratio for use in a syngas conversion reactor. In this process a H.sub.2 /CO ratio of from approximately 1.0 to 3.0 for the blended syngas feed is selected. A first syngas is formed with a H.sub.2 /CO ratio of at least 2.0 by reacting methane with an oxygen source. A second syngas is formed with a H.sub.2 /CO ratio of no more than 1.5 by reacting LPG with CO.sub.2. The first syngas and the second syngas are blended to form a blended syngas feed with the selected H.sub.2 /CO ratio, and this blended syngas feed may be used in the syngas conversion reactor.

41 Claims, 2 Drawing figures

☐ 8. Document ID: US 6512018 B2

L7: Entry 8 of 9 File: USPT Jan 28, 2003

US-PAT-NO: 6512018
DOCUMENT-IDENTIFIER: US 6512018 B2

TITLE: Hydrocarbon conversion process using a plurality of synthesis gas sources

DATE-ISSUED: January 28, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kennedy; Paul Edwin	Tulsa	OK		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Syntroleum Corporation	Tulsa	OK			02

APPL-NO: 09/ 817544 [PALM]
DATE FILED: March 26, 2001

PARENT-CASE:
RELATED PATENT APPLICATION This application claims priority of U.S. Provisional Application No. 60/192,503, filed Mar. 28, 2000, entitled, "System and Method for Converting Light Hydrocarbons Into heavier Hydrocarbons with a Plurality of Synthesis Gas Sources."

INT-CL: [07] C07 C 27/00

US-CL-ISSUED: 518/715; 518/700, 518/702, 518/703, 518/704
US-CL-CURRENT: 518/715; 518/700, 518/702, 518/703, 518/704

FIELD-OF-SEARCH: 518/700, 518/702, 518/703, 518/704, 518/715

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4833170	May 1989	Agee	
5763716	June 1998	Benham et al.	585/315
6248794	June 2001	Gieskes	518/700

ART-UNIT: 1621

PRIMARY-EXAMINER: Parsa; J.

ATTY-AGENT-FIRM: Dority & Manning

ABSTRACT:

A Fischer-Tropsch-based process and system for converting light hydrocarbons into heavier hydrocarbons uses a plurality of different synthesis gas generators. The process includes preparing a first synthesis gas having a H.sub.2 :CO ratio greater than 2:1; removing a portion of the hydrogen from the first synthesis gas; preparing a second synthesis gas with a CO.sub.2 recycle wherein the second synthesis gas has a H.sub.2 :CO ratio less than 2:1; adding the removed hydrogen to the second synthesis gas to increase the H.sub.2 :CO ratio of the second synthesis gas; and using a Fischer-Tropsch reaction to convert the first synthesis gas and the second synthesis gas to heavier hydrocarbons.

11 Claims, 4 Drawing figures

☐ 9. Document ID: US 6277894 B1

L7: Entry 9 of 9 File: USPT Aug 21, 2001

US-PAT-NO: 6277894
DOCUMENT-IDENTIFIER: US 6277894 B1

TITLE: System and method for converting light hydrocarbons into heavier hydrocarbons with a plurality of synthesis gas subsystems

DATE-ISSUED: August 21, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Agee; Kenneth L.	Bixby	OK		
Agee; Mark A.	Tulsa	OK		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Syntroleum Corporation	Tulsa	OK			02

APPL-NO: 09/ 538609 [PALM]
DATE FILED: March 29, 2000

PARENT-CASE:
RELATED APPLICATION This application claims the benefit of U.S. provisional application Ser. No. 60/126,996, filed Mar. 30, 1999, entitled SYSTEM AND METHOD FOR CONVERTING LIGHT HYDROCARBONS INTO HEAVIER HYDROCARBONS WITH A PLURALITY OF SYNTHESIS GAS SUBSYSTEMS.

INT-CL: [07] C07 C 27/00

US-CL-ISSUED: 518/700; 518/702, 518/703, 518/704
US-CL-CURRENT: 518/700; 518/702, 518/703, 518/704

FIELD-OF-SEARCH: 518/700, 518/702, 518/703, 518/704

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4833170	May 1989	Agee	518/703
4973453	November 1990	Agee	422/190
5490377	February 1996	Janes	60/39.12
5666800	September 1997	Sorenson et al.	60/39.02
5694761	December 1997	Griffin, Jr.	69/39.05
5733941	March 1998	Waycuilis	518/703
5861441	January 1999	Waycuilis	518/703
5973631	October 1999	McCullen et al.	341/144
5980840	November 1999	Kleefisch et al.	422/211

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0748763A1	December 1996	EP	
WO 97/30011	August 1997	WO	
WO 99/19277	April 1999	WO	

OTHER PUBLICATIONS

"PFBC clean-coal technology. A new generation of combined-cycle plants to meet the growing world need for clean and cost effective power." ABB Carbon Marketing Department, S-612 82 Finspong, Approximately Feb. 1998.
PCT International Search Report (PCT Rule 44.1), mailed Nov. 2, 2000 re International Application PCT/US00/08371 filed Mar. 29, 2000 (Applicant's reference 062754.0214).

ART-UNIT: 161

PRIMARY-EXAMINER: Padmanabhan; Sreeni

ASSISTANT-EXAMINER: Parsa; J.

ATTY-AGENT-FIRM: Baker Botts L.L.P.

ABSTRACT:

A system and method for converting normally gaseous, light hydrocarbons into heavier, longer-chain hydrocarbons includes a turbine; a first synthesis gas subsystem; a second synthesis gas subsystem that receives thermal energy from the turbine and which preferably includes a steam reformer; and a synthesis subsystem for receiving synthesis gas from the first synthesis gas subsystem and the second synthesis gas subsystem and for producing the heavier hydrocarbons.

A method includes using a plurality of synthesis gas subsystems to prepare synthesis gas for delivery to and conversion in a synthesis subsystem.

5 Claims, 6 Drawing figures

Term	Documents
(3 OR 2).PGPB,USPT,USOC,EPAB,JPAB,DWPI.	9
(L2 OR L3).PGPB,USPT,USOC,EPAB,JPAB,DWPI.	9